



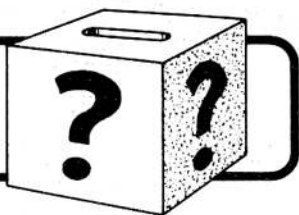
NUCLEAR DIVISION NEWS

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 5 — No. 18

September 19, 1974

QUESTION BOX



If you have questions on company policies, benefits, etc. or any other problems with which we might help, just let us know. Drop your inquiry to the Editor, Nuclear Division News. (Or telephone it to your plant news representative). You may or may not sign your name. It will not be used in the paper if you so desire.

Questions are referred to the proper authorities for accurate answers. Each query is given serious consideration for publication.

Answers may be given to employees personally if they so desire.

QUESTION: Why does Carbide hold back older employees to keep them from reaching the top of their code (like \$100 or more under top)? I'm speaking of employees with ten to fifteen years or more of company service and still not at the top - especially clerical workers. New hires come in with no experience and receive seven, nine, and ten percent increases, some twice a year, while "old faithfuls" get five and one-half percent - the top goes up six percent, and they regress. If there is going to be a top, shouldn't the Company know after ten to fifteen years if an employee is worth it, and if not, why is he still on the payroll?

ANSWER: Salary increases and salaries paid within a rate range are determined primarily by each individual's job performance, and not years of company service. Each salary range is characterized by minimum, job rate and maximum dollar values. The job rate is the salary level which an employee may anticipate attaining based upon fully satisfactory performance. The portion of the salary range above the job rate is reserved for rewarding those employees who perform their job duties in a superior manner, with the maximum reserved for outstanding performers. When an employee has attained the appropriate position in a salary range and continues to perform in a similar manner on the same or an equivalent job, it is the responsibility of the Company to insure that there is no erosion of the individual's relative salary position in the range.

Each year the salary ranges are adjusted, and on January 1, 1974, the non-exempt ranges were adjusted by 5.5% in line with regulations of the Economic Stabilization Act. An employee receiving a 5.5% increase during the first half of 1974 would, therefore, have maintained his relative position in the range.

QUESTION: Does the Company have a dress code? Would there be any objection to men wearing tank tops? Some work areas get extremely warm in the summer months.

ANSWER: The Company does not have a dress code as such; however, each employee is expected to dress in an appropriate and acceptable manner for the type work he or she does and the area in which he or she works. We know of no areas where a tank top would be an acceptable garment to be worn due to the safety hazard and to its general unattractive appearance. Employees are encouraged to refrain from reporting to work dressed in a manner which is generally considered extreme.

QUESTION: Why doesn't Carbide have a vacation policy that allows an employee to take vacation without pay if the employee so desires? The Company could set a maximum of two or three weeks per year vacation without pay above paid vacation to which his company service entitles him.

ANSWER: We hire people because we have a job for them to do, and we need them on the job to get it done.

In 1973 the average employee had approximately 20 days of vacation, 10 holidays, and was absent another 9 days because of illness or for some other reason. This averaged 39 days of absence for warranted reasons out of a possible 260 working days (1-1/2 days each 2 weeks).

We do permit employees to be off for periods in addition to their paid vacations when extenuating personal circumstances warrant it. We do not think, however, that a formal plan providing for additional time off at the employee's option, even though without pay, could be justified.

QUESTION: It was always my impression that it is Company policy that when you go from one job classification to another in the plant, you have to bid upward. It has come to my attention now that janitors bidding into the guard department have to take a pay cut. It seems to me that when you take a job that has a lot

(Continued on page 8)

Zerby named production's technical services manager

Clayton D. Zerby, active in Union Carbide research and development programs for many years, has been named technical services manager for the Nuclear Division's production facilities in Oak Ridge. His appointment is effective October 1.

Zerby, who will report to William J. Wilcox Jr., Technical Director for the Nuclear Division, will coordinate and manage technical services, including analytical laboratory, inspection, certification, quality assurance and personnel and environmental monitoring services at the Oak Ridge Y-12 Plant and the Oak Ridge Gaseous Diffusion Plant.

Previously at ORNL

Zerby has been with Union Carbide Corporation since 1950 when he joined the staff of Oak Ridge National Laboratory where he served as engineer, physicist and group leader. He left ORNL in 1963 to become group leader in the development department at Union Carbide and, in 1965, was made director of technology for Carbide's defense and space systems department. He was named manager of that department the following year.

In 1967, he became manager of the systems planning department, and later that year was named general manager of the KORAD department with responsibility for the development and manufacture of lasers.

Zerby became President of Ocean Systems, Inc., an affiliate of Union Carbide, 1971. When Ocean Systems was sold in 1973, he was appointed President of Domsea Farms, Inc., a Carbide subsidiary, which is a salmon breeding facility located in Bremerton, Wash.

Professional affiliations

He is a member of the American Management Association, American Physical Society, American Nuclear Society, the Research Society of America and Sigma Xi.

He has served on many special committees, including the U.S. Atomic Energy Commission's Cross Section Advisory Group, and the ad



Clayton D. Zerby

hoc Committee of the U.S. Air Force's Scientific Advisory Board on Space Radiation Effects.

Zerby received his bachelor of science degree in mechanical engineering from Case Institute of Technology, Cleveland, Ohio, in 1950, his master's degree in physics from The University of Tennessee in 1956, and his Ph.D. in physics from UT four years later.

IN THIS ISSUE

Bicycle creates special on-the-job hazards Page 2

United Way chairmen appointed Page 3

Prototype vessels given high pressure tests Page 4

The "tiny world" of Microcosm, Page 5

NUCLEAR DIVISION SAFETY SCOREBOARD

Time worked without a lost-time accident through September 12:

Paducah	38 Days	278,000 Man-Hours
ORNL	88 Days	1,467,862 Man-Hours
ORGDP	190 Days	3,381,805 Man-Hours
Y-12	457 Days	14,381,000 Man-Hours

Bicycle riding in plants creates hazards

(Editor's Note: A recent mishap at one of the Nuclear Division plants reemphasized the necessity of extra caution on the two-wheeled vehicles. As an energy-conserving measure, the bicycle is fine, but it does add a problem or two for traffic. In this article, many factors have been gleaned from safety journals and talks around the plant. It is hoped it will help in making the bicycle a safer mode of transportation, both in and out of the plant.)

There are more bicycles than cars in this country, a fact surfacing recently as a result of the energy crisis and the new American craze for recreational "extras." But it is not the "recreational" bicycle that concerns Nuclear Division employees primarily. It is the cycle used on the job in all four of the facilities.

There are an estimated 500 bicycles in use at the three Oak Ridge plants and at the Paducah installation! These vehicles are all used inside the respective plants, many of them inside buildings within the plants themselves.

Biking is an economical way to get there, and it sure beats walking, particularly in some of the buildings in these plants. But the bike offers little or no protection to the operator in case of an accident. Many times the cyclist is thrown completely clear of the vehicle onto the ground or pavement.

A few simple rules are bound to keep the operator of a cycle out of trouble. A quick review shows:

Absolutely no horseplay. Getting astride a bicycle may bring out the kid again in us, but we should curb those instincts which cause showing off, or stunting.

Both hands should be kept on the bars. Two-handed driving gives better control at all times.



DISTRACTING ATTRACTION — Michael Hosick looks back to see the attraction unaware of the pick-up truck parked directly in front of him. The attraction is the Paducah Plant's Jenny Schnuck.

Store cargo only in baskets. Never try to carry it with you. Both hands are needed to properly control the vehicle.

Keep on the main thoroughfares in the plant. Taking short-cuts in or around the buildings may lead to unsafe sections of road.

Watch corners and obstructed views. A pedestrian may be just around the corner, or an obstruction may be awaiting there to derail you.

Keep your eye on the road. A perfect example of distraction is the photo accompanying this article from the Paducah Plant. The guard is distracted by a pretty girl, unaware of the truck parked directly in his path. Sure injury is his immediate reward.

The bicycle is not a toy . . . not at least when it is used on the job.

Motorists must give the cyclist the same rights as other vehicle operators have.

Avoid leaves, dirt or railroad tracks imbedded in the pavement. Any obstacle that might overthrow your vehicle is a hazard to your flight.

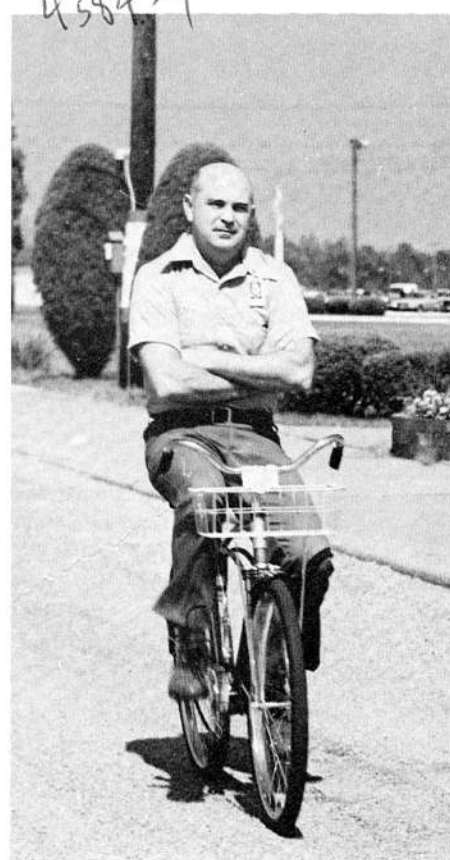
Due to the heavy traffic flow into the plants at shift time, biking to and from work is discouraged. Car

pooling is suggested as a principle means of conserving energy in getting to and from work.

While the use of bicycles increases both on and off the job, it is the responsibility of the operators first to see that bikes are ridden on designated ways, uncongested areas and at times when there is relatively little automobile traffic. It is the non-bicyclist's duty to give the rider the same rights any other vehicle operator has.



HITCHING A RIDE — Paducah's Michael Hosick demonstrates a sure way to an injury as he hitches a ride. The National Safety Council says that biking is a lot of fun, but you have to think for the driver of the larger vehicle, as well as for your own maneuvers.



DARING YOUNG MAN — Paducah's Allen Russell pulls the no-hands routine as he passes a fork lift in the Paducah Plant. Never show off or indulge in horseplay, advises Russell. That's a sure way to the dispensary or worse.



ONE IN HAND — David Le Duox uses one hand to steer his bicycle and carries a carton in the other. Both hands are needed to steer the bike, authorities state.

COMPANY Service**20 25 30****ORGDP
30 YEARS**

Raymond A. Greene Jr., Engineering Division; William H. Rogers, mechanical services department; Clarence O. Wolgamott, U-235 separation department; Edward Stephenson, shop services department; and Leon Smith, power and utilities maintenance.

25 YEARS

Charles Renfro.

20 YEARS

John D. Burke and William P. Teichert.

**GENERAL STAFF
30 YEARS**

Charles R. McAlister, Purchasing Division; and Charles M. Johnson, General Accounting Division.

20 YEARS

Phyllis H. Smith.

**PADUCAH
20 YEARS**

Stanford W. Welch.

**Y-12 PLANT
30 YEARS**

William T. Galyon, plant protection department; Charles E. Gillihan, Madeline S. Franklin and Beatrice M. Cameron, statistical services and SS control; Robert B. Strickland, material transfer and packing; Clifford Patric, building services department; Claude D. Langley, utilities administration; Guy W. Linkhous, plant protection department; and Mary K. Housholder, laboratory operations.

25 YEARS

Harrison Raper.

20 YEARS

Charles E. Oney, Harlan C. Wright, Jesse A. Shell, Thomas J. True Jr., Russell C. Blevins, Walter T. Goodwin, Richard V. Anderson, Harold D. Scarbrough, Joe B. Tallent, Nonda W. Evans, George L. Day, Leo L. Brown, John J. Henry, Jesse H. Thomas, Floyd J. Womack, Robert S. McGinnis, Ronald M. Hughes and Andrew W. Maxey.

United Way chairmen gear for annual drive

Four United Way appointments have been announced by George W. Evans, who is coordinating the Division's efforts in Oak Ridge, and the Paducah Plant has also named its campaign director.

For General Staff, W. "Tee" Carter, General Accounting, will head United Way operations.

Carter, a 22-year veteran, was born in Lynch, Ky. He attended Tennessee Wesleyan College and graduated from Tennessee Technological University. He successfully managed the Staff's Bond Drive last year, and has been active in United Way campaigns in the past. A member of the National Association of Accountants, he is active in the Concord Farragut Optimist Club.

The Carters live at 8712 Kingsridge Drive, Knoxville, and have two children, Tricia and Tommy.

James A. Cox will head United Way efforts at the Oak Ridge National Laboratory. He is a graduate of Washington State College, and has done graduate work at Brown University. In 1942, he entered the U.S. Army and was assigned to the Manhattan District in Oak Ridge.

In 1946, Cox joined the staff of Clinton Laboratories (now ORNL) as head of the Radioisotopes Sales Program. He is currently superintendent of the Operations Division, which includes reactor operations, hot-cell operations and radioactive waste disposal. He was recently named a Fellow in the American Nuclear Society.

Cox and his family live at 112 Everest Circle, Oak Ridge.

Anna Rose Davis, Employee Relations Division, will spearhead the United Way at the Paducah Plant.

Miss Davis, a native of southern Illinois, is a graduate of the Murphysboro Township School and Draughtons Business College. In May of this year, she was appointed supervisor of the insurance and benefit plans department. She joined Union Carbide at the Paducah Plant in 1953.

Lee Collins Porter, administrative assistant in Engineering at the Oak Ridge Gaseous Diffusion Plant, will



W. "Tee" Carter



James A. Cox



Anna Rose Davis



Lee C. Porter

head United Way campaign efforts in that plant.

Mrs. Porter, a native of Knoxville, holds a B.S. degree in marketing from The University of Tennessee, and has done graduate work in psychology. She belongs to the UT Century Club.

Mrs. Porter lives at 3636 Taliluna Avenue, Knoxville, with her daughter, Crystal. She has been active in UW campaigns since joining Union Carbide in 1970, has been the Engineering Division chairman for three years, and last year served as ORGDP's assistant plant coordinator.

Herman G.P. Snyder, superintendent of Employee Relations at the Y-12 Plant, will head that plant's United Way efforts for 1974.

A native of Slatington, Pa., Snyder holds a B.S. degree from Lehigh University. He served in the U.S. Army Corps of Engineers at Oak Ridge, and joined Union Carbide immediately after his discharge in 1946.

Active in community affairs, Snyder is past president of the Oak Ridge Chamber of Commerce, has served on the Mayor's Committee on Highways, on the Oak Ridge Planning Commission, and as a member of the Oak Ridge Human Resources Board for seven years, including two years as chairman. He is a past president of the Grace Lutheran Church.

The Snyders live on Guinn Road, just outside Oak Ridge. They have two daughters.



Herman G.P. Snyder

Division Deaths

Rex A. Jenkins, who took a medical retirement from ORGDP last October, died September 6 at his Oliver Springs home. A native of Sevierville, Mr. Jenkins was a maintenance mechanic at ORGDP for 29 years. He is survived by his wife, five daughters, a sister and two brothers. Funeral services were held at Frost Bottom Baptist Church, with the Rev. Ted Moore officiating. Interment followed in the church cemetery.



QUALITY ASSURANCE WINNER — Clovis R. Copeland won the successful Quality Assurance slogan contest staged at the Paducah Plant. His entry, "Give the Job Your Best — Quality Will Stand the Test," was declared first in the crowded field. From left are Clyde C. Hopkins, Plant Manager; Copeland, John L. Clark, assistant plant manager; and Eugene Waggoner, plant quality assurance coordinator.

Prototype vessels tested in important HSST program

The assignment: take a 10-ton carbon steel vessel constructed according to the ASME code, machine a flaw in it and subject it to internal water pressure for several hours until it bursts. In addition to recording the time-temperature stress required to cause failure, try to determine in detail just how the flaw grows to a large crack in the six-inch-thick vessel wall.

This is one of the principal tasks of the Heavy Section Steel Technology (HSST) Program conducted at Oak Ridge National Laboratory's Reactor Division for the U.S. Atomic Energy Commission. The program, which began in 1967 as part of the water reactor safety program, is under the direction of Grady D. Whitman. He is assisted by Grover C. Robinson, Jack E. Smith, John G. Merkle and Peter P. Holz, Reactor and Domenic A. Canonico, Metals and Ceramics. F. J. Witt, formerly of ORNL, also played a key role in the study.

The test program is important because it assists in establishing the criteria for construction of vessels which must contain nuclear reactor fuel cores and their primary coolant water. The ORNL portion of the program differs from destructive tests conducted at other installations because of the large size of the vessels that have been deliberately flawed to induce failure.

Since the program's beginning, test specimens in the study have

progressed in size from small, laboratory-size specimens up to the 20,000 pound carbon steel vessels currently being tested. The vessels were made by Taylor Forge Company of Paola, Kan. Through August, eight of these "intermediate-size" vessels have been tested to failure. Two more remain to be tested in the series.

Using machining assistance from the Y-12 Plant, a vessel is flawed with one or more cracks on the exterior or interior. The vessel then is moved from the ORNL facility at Y-12 to the test station at the Oak Ridge Gaseous Diffusion Plant. Internal liquid pressure is applied to the vessel until it fails. During the test, a number of instruments monitor the material behavior in the vicinity of the flaw.

The research team pointed out in a recent report that while the tests obviously cannot provide failure statistics for light water reactor vessels, they do demonstrate qualitatively that failure of such vessels due to undetected flaws is extremely improbable.

Hiatt named material foreman at Paducah



Hiatt

James W. Hiatt has been named a materials foreman in the Paducah Plant's Finance and Materials Division.

A native of Hickman County, Ky., Hiatt received his education there. Before joining Union Carbide, he was with the Ashland Oil Company in Clinton, Ky.

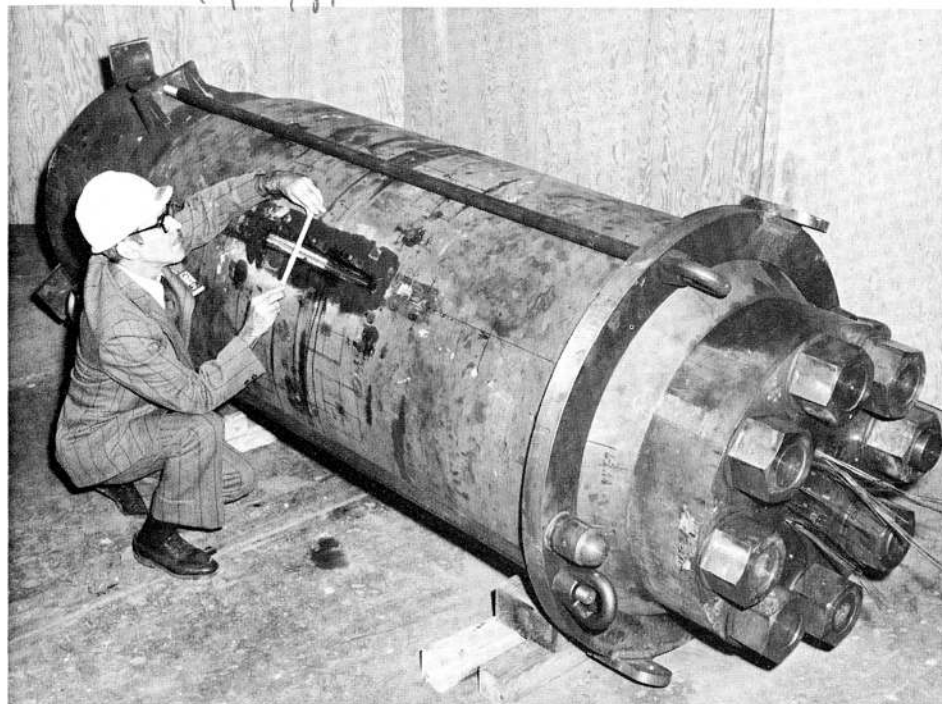
Hiatt and his wife Violet live at 1917 South 25th Street, Paducah. They have two children, Ivy and William.

OTHER CONTRIBUTORS TO CHE HANDBOOK

In addition to Kuang-Hui Lin, three other Nuclear Division staff members contributed chapters to the Fifth Edition of Perry and Chilton's **Chemical Engineers' Handbook**.

Wallace R. Gambill, ORNL, contributed a chapter entitled, "Prediction and Correlation of Physical Properties," and Richard L. Hoglund and Edward Von Halle, ORGDP, contributed chapters on "Diffusional Separation Processes."

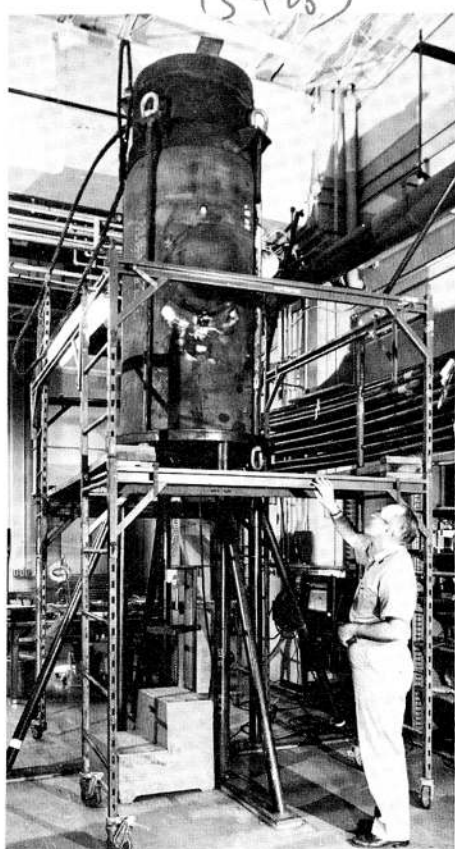
A Union Carbide consultant, G. J. Raymur contributed a chapter entitled, "Handling of Bulk and Packaged Solids."



VESSEL INSPECTED — H. Dan Curtis, ORNL's Reactor Division, checks the post-test dimensions of the flawed area of a test vessel. The behavior of this vessel was accurately predicted to leak at 2.2 times the design pressure. The flaw, 15 inches and five inches deep in the six inch wall, can be seen under the scale.



EVALUATING FAILURE CHARACTERISTICS — A series of tests to failure on thick-walled, carbon steel vessels are being conducted at Oak Ridge National Laboratory in support of the AEC-sponsored Heavy Section Steel Program. The purpose of the program is to evaluate failure characteristics of test vessels representative of the design, material, fabrication and inspection requirements for current light-water reactor vessels. After a flaw is machined at external or internal locations on a vessel, the vessel is subjected to intense, internal liquid pressure until it bursts. Inspecting the vessel above is Jim Teague.



PRE-TEST CUT — Thomas C. King, ORNL's Reactor Division, views a vessel made for testing in the HSST Program. The seven-foot tall, 10-ton vessel was mounted on a shop scaffold in Y-12's Building 9201-3, to permit a three-quarter inch deep cut in the interior of the nozzle. After oil pressure widened the tiny cut on the interior to a hairline fracture, approximately one and one-quarter inches by three and one-half inches, the vessel was placed in a pressure testing facility at ORGDP.

Secretarial courses set at High School

The Oak Ridge Chapter of the National Secretaries Association is again offering a series of classes during 1974 and 1975. The purpose of the study courses is to provide secretaries and other office personnel the opportunity for professional improvement and to assist those studying for the certified professional secretaries examination. A five-week course will be offered on each of the six sections of the examination. Study courses offered will include:

- Environmental relationships (psychology & human relations)
- Secretarial procedures and administration
- Economics of management
- Financial analysis and mathematics of business
- Business and public policy (business law)

Communications and decision making (In-Basket course on skills)

The first course, environmental relationships, will meet on each Wednesday from 6:30 p.m. to 8:30 p.m., beginning September 25 at the Oak Ridge High School. Thomas Cressler, TVA personnel staff director, will serve as instructor. Registration fee will be \$15 plus cost of textbook (can be ordered through NSA).

The schedule for subsequent classes will be given at a later date.

Registration forms are available from Nelline Ross, extension 3-7801; or Mari-grace Kirstowski, 3-5855.

THE LAST WORD

Matrimony: the high sea for which no compass has yet been invented.

Fate of radioelement determined in ORNL studies

For many years scientists in the Environmental Sciences Division at Oak Ridge National Laboratory have studied the process of element cycling in the environment. Recently, emphasis has been placed on how radioelements and toxic chemicals are cycled in the soil, since soil is a medium through which elements subsequently become available to growing plants and man.

Studies of the input, output and retention of elements in the soil may be done in several ways. One approach involves taking samples from a landscape area like the Walker Branch Watershed (a relatively undisturbed forest system located in the ORNL complex). Another approach involves the use of tiny ecosystems or microcosms which simulate the natural environment in a laboratory setting.

Microcosm is old concept

Sidney Draggan, a microbial ecologist (Ph.D. in ecology from Rutgers University), explains: "The use of microcosms is not new, it is not even restricted to research. Lots of people have them without realizing it. For instance, a balanced aquarium is a microcosm - a small self-sustaining replica of a lake or stream. In the 1960's there was a flurry of interest in microcosms because of the space program. NASA recognized that if a space station were to be self-sustaining it would have to be a microcosm of the earth's system."

In studies with microcosms, Draggan and his colleagues, Martin Witkamp and Beverly S. Ausmus, have shown that when elements are introduced to the soil, they may be taken up by the microorganisms which exist there. The elements may be accumulated and used in the growth, maintenance and reproduction of the organisms, in many cases, and may be transported from the original area of uptake. (Contrastingly, elements are often effectively retained in the soil which removes them from biological circulation.)

Contents of microcosms

The types of microcosms Draggan constructed for these particular experiments contained a simple soil (ordinary sand), dead plant material (leaf litter) and live plants, all of which are common to this area. These components of the ecosystem were placed in small containers. Microorganisms included three types of fungi, *Aspergillus niger* (black bread mold), *Trichoderma viride* and *Mucor sp.*, which were added to create an active microbial community. Microbes play a very important role in decomposition and mineral transformations involved in element cycling.

Since microbes need "energy" in order to do their work, Draggan added a nutrient mixture made up of essential salts and sugars to his microcosms. He also added a radioelement, cobalt-60.

The small containers were placed in a programmed incubator for seven days. The incubator was used to simulate physical factors that affect the outside environment, such as day

(light) and night (dark) cycles, weather and temperatures occurring in this area. Keeping the microcosms under nearly the same conditions as those existing outdoors enabled Draggan to better relate the results of his studies to the real environment.

Use of microprobe system

After the seven days were up, Draggan removed sand grains from the microcosms and observed them with the microprobe analysis system, a special feature of the scanning electron microscope. He was able to gather several types of information from the interaction of the specimen and the beam of electrons, which included photographs, elemental spectra and elemental maps of the specimen. "Microprobe analysis in which elemental analysis is done by measuring the energies and intensities of characteristic x-rays, was used in this study to estimate elemental concentrations in soil microorganisms," said Draggan.

With this technique, Draggan looked at four components of the sand grain: bare sand surface, fungal hyphae, fungal sporangiophores (spore holders) that contained immature spores or seeds, and mature spores that had been liberated from the holders.

Cobalt in spores

The bare sand surface had no living organisms on it and showed only silicon; the fungal hyphae and sporangiophores showed the elements potassium, calcium, phosphorus and sulfur; the fungal spores contained the same elements in addition to the cobalt-60 which had been introduced into the microcosm.

This experiment showed how a radioisotope, namely cobalt-60, moved and/or was accumulated by fungus from contaminated soil in a microcosm. Draggan explained: "After the cobalt was put into the microcosm, it was taken up by the microbes (in this case, *Trichoderma*) which were growing in close association with the soil surfaces. Since cobalt is a normal constituent of vitamin B-12 the fungus took the cobalt into its body and incorporated it into the vitamin needed for its growth, maintenance and reproduction. The most important point to remember is that when any organism goes through its reproductive stage, most of its resources are given to its offspring. The fungal spores, therefore, probably received a large amount of the cobalt that had been incorporated into vitamin B-12."

Transport is through dispersion

"The fact that the cobalt was taken up as a vitamin does not seem too bad, but we must remember that it is still a radioisotope. The cobalt is further transported in the cycle when these spores are dispersed. The fungus which I was working with disperses its spores much like the common puff-ball. Most people have taken a puff-ball and squeezed it only to watch the spores fly away."

Draggan does not know yet what the magnitude or importance of this pathway of cobalt transport is, but he has shown through his research that it does occur.



MICROCOSM IN A VIAL — Sidney Draggan, ORNL's Environmental Sciences Division, is shown with the components he uses in constructing his research microcosms. Completed microcosms are shown to his right.

The transport of radionuclides and toxic chemicals is a subject which is of interest to many people in their concern for the environment. "People are beginning to realize that you can not put something down in the environment and expect it to stay at the point of input," said Draggan. "It has been stated that microorganisms can immobilize, break down or recycle most compounds, except molecular oxygen." Even DDT, which is a very persistent chemical, may be degraded by a variety of microbes acting on the DDT molecule under differing conditions of oxygen availability. This means simple that almost anything that is put in the environment, whether good or bad, will eventually be recycled back to the system and used again because of the work of microorganisms.

Studies for EPA

Draggan and other environmental scientists at ORNL are evaluating testing procedures that explain transport of toxic substances for the Environmental Protection Agency. The EPA is supporting the passage in Congress of a Toxic Substances Act. This Act would require that any chemical produced in excess of 1,000

pounds per year undergo some type of testing before it is put on the market. ORNL's report to EPA will deal with those test procedures that best tell what happens to toxicants in nature.

The problem is to devise tests which can be used by industry that are simple, inexpensive and that give some idea of what will occur in the real environment. The use of microcosms, in an intelligent manner, may be the solution. "Testing a potential candidate substance in a microcosm, which may be as tiny as a pill vial or as large as a few acres, would certainly be better and cheaper than spraying it on a large landscape area to test the environmental effects," said Draggan.



To William T. McDuffee Jr., Jouko E. Savolainen, Russell P. Wischow, and Alan T. Gresky, ORNL, for "Process for Separation of Protactinium, Thorium, and Uranium from Neutron-Irradiated Thorium."

RECREATIONOTES

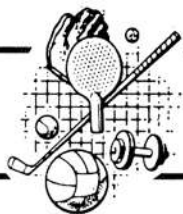


TABLE TENNIS

Several Union Carbide employees placed high in the recent table tennis tournament held in Knoxville. Over 50 players from Tennessee and North Carolina competed in the championship event. Olympic-style medals were awarded the winners and runners-up.

Joe Ching, ORNL, won best of five games of UT's Bill Edwards in the champ class. In Class C, Y-12's Roy Huddleston was runner-up . . . and in Class D, Y-12's Gordon Brewer was also runner-up.

In the Women's Events, Janice Longstreth, ORNL, placed second.

In the Seniors Event, only four players admitted to being "over 40," so a "round robin" was played. ORNL's Charles Clifford emerged tired, but victorious.

DEAD HORSE LAKE GOLF

Finals at the Dead Horse Lake League give Jerry Raper, Don Norris and Sam O'Neal top berth. Ed Crowder, Jim George and Bill Butturini grabbed second place, and C. T. Haun, Jack Holt and J. Jones came in third.

CARBIDE SOUTHWEST POINT GOLF

Frank Copeland and Alvin Boatwright were first place winners in Carbide's Southwest Point Golf League. Bill Briscoe and Jack Williams edged in second, while Howard Phillips and Jim Winters placed third.

CARBIDE MELTON HILL GOLF

Alvey-Pryson took the final standings in the Carbide Melton Hill Golf

PADUCAH MIXED SCRABBLE

The largest field ever to enter a Paducah Mixed Scrabble golfing event teed it up at the Calvert City Country Club recently.

To show the caliber of golf produced by the teams, not a single one scored above par. All were one under par or better, the range being from a winning eight under to the "loser?" at one under par.

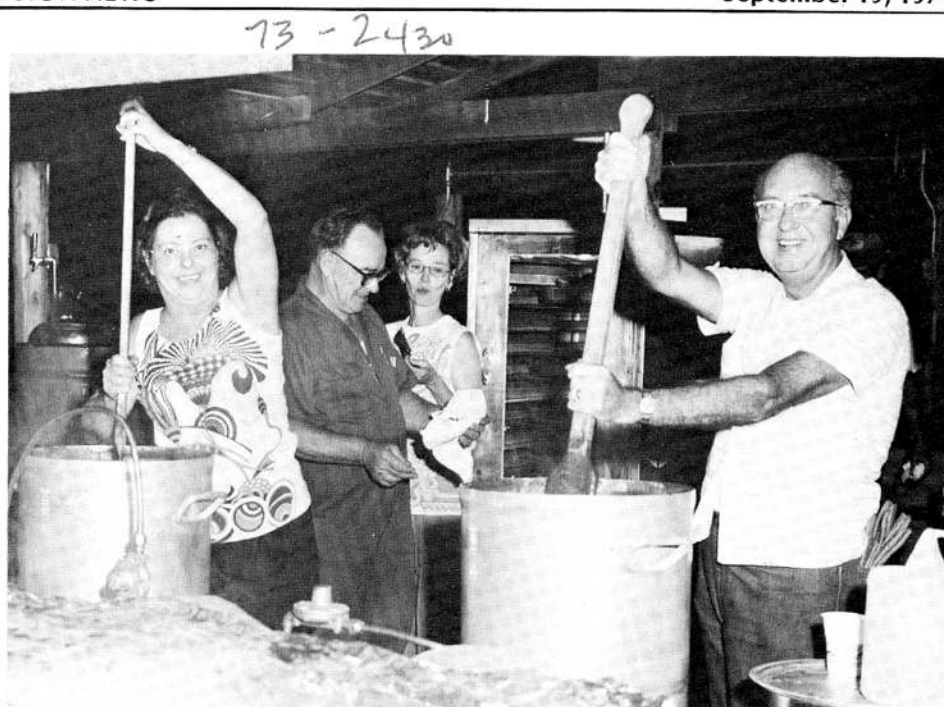
Elvin Kuehn's team of JoAnn Longton, Don Karr, Joe Blayne and Damon Shore put together an eight under par 64 as did the team captained by Forest Edwards and composed of Pat Karr, John Tietyen, Jerry Neal and Manley Fortune, who had to be satisfied with the runner-up spot on the playback tie-breaker. Third place was claimed by the Bill Cronin team with a tie breaking seven under which brought the Clyde Hopkins team in at fourth.

PADUCAH BOWLING

The Paducah Men's Bowling League started play on their 35 week schedule recently and will continue with their eight team schedule through May 1, 1975.

The bowling committee has issued a call for all employees that would like to participate to contact one of the captains or contact the recreation department on PAX 335. New blood is needed for the league. Play is on the handicap basis, and is held each Thursday at 5:45 p.m. at the Cardinal Lanes in Paducah.

League, two points ahead of Bailey-Mundt. Winstead and Sherrod came in third.



BARBECUE-STIRRERS — Barbecue, the like of which you've never tasted, is prepared by Evelyn Cole, from left, master chef Charlie McIntyre, Madeline Rathbone and Rex Cole.

ORGDP BARBECUE-HOOTENANNY

Plans are jelled for the big Saturday, September 28, party for K-25ers at the park.

There will be music furnished by "The Night Shift." Tommy Shannon is responsible for the music. He says there will be listening music, as well as some band stuff for the younger crowd. He and Jim Davis will be responsible also for the "sing-along."

Roy Quarles is responsible for checking tickets at the main entrance, as K-25ers will pay \$1 and \$2 for tickets for the big affair.

Louis Alley distributed posters throughout the plant, and at Auditing and Purchasing, publicizing the hootenanny.

J.R. Quarles is prop man, responsible for the small tables and chairs and ice and other commodities. Madeline Rathbone has the responsibility for getting servers up on the line from the ranks of wives.

Ben Teague and Terry Robbins coordinated A-Shift barbecuers to see that the meat will be done right.

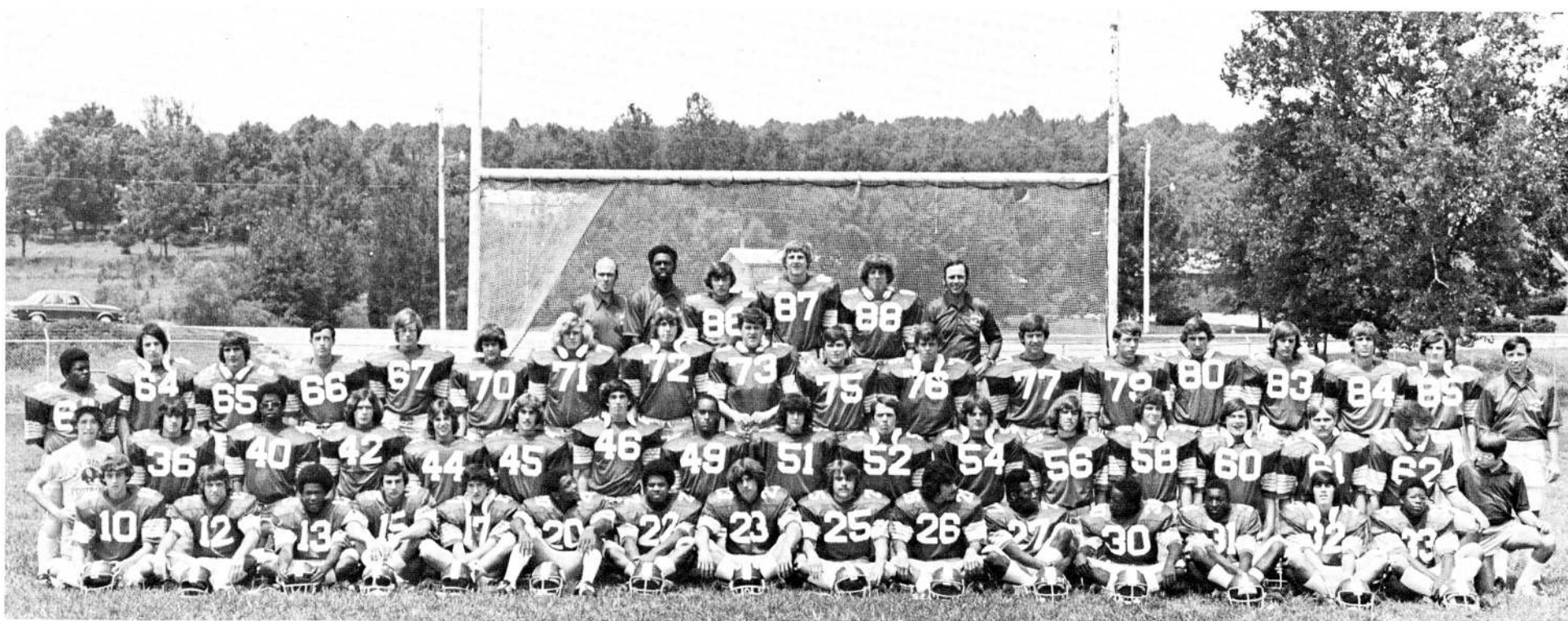
F. Calhoun and Jim Harris are responsible for grill and cooking equipment. C.H. McIntyre and his fine crew of barbecue experts will again provide the expertise to cook the succulent meat. (There will be some for sale to take home, too.)

Reva Suggs will be a new hand at the helm, seeing that a lot of equipment gets there that will be needed, and, as usual Virginia Donahue and a hundred others have been busy for weeks getting plans together for the big event.

The crowd grows every year, so ORGDP-men and women should get their tickets early to make sure the family will enjoy the big outing. Retirees may obtain tickets from the Recreation Department. Just call Oak Ridge 483-8611, extension 3-5833.

THE LAST WORD

A politician is a man who says "nice to see you again," even if he has never seen you before.



WILDCATS — The 1974 Oak Ridge High School football team is shown above. From left, front row, are Kurt Johnson, Dean Nichols, Dwayne Horton, Mark D'Amico, Scott Smith, Roger Wade, Michael Toy, Gary Richards, Gary Dodson, Ronnie Croley, David Robinson, Craig Freeman, Ray White, David Hetzel and Brian Roebuck. In the second row, from left, are: Jon Keith, manager, Gary Renfro, Greg Gray, Johnny Milloway, Brent Gresham, Tim Scott, Jim Younkin, Gerry Walker, Gary Black, Jeff Kingsley, Hugh Cristie, Mark Forrester, Bobby Pullen,

George Mead, Jerry Boswell, Gerald Waddle and Mike Brewster, manager. Third row, from left, are: William Harris, Tom Turmelle, Johnny Reeves, Bill Crowder, Jeff Jones, Tim Strunk, David Copeland, Mike Wiseman, Randy Peterson, Scott Cambron, Tony Schill, John Gick, Jamie Hopkins, Bobby DeBakker, Mike Hatmaker, Randy Booker and Emory Hale, head coach. Fourth row, from left, are: coach Paul Brewster, coach Vant Hardaway, Steve Love, Mark Hardin, Brian Campbell and coach Charles Granning.

Heart attacks without heart disease

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning their health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, or call the news editor in your plant, and give him your question on the telephone.)

By T. A. Lincoln, M.D.

About 5:00 a.m. a 45-year-old father is awakened, gasping for breath, with a severe squeezing pain beneath his breast bone. His wife frantically calls for an ambulance. In spite of heroic efforts by the ambulance and emergency room staff, he dies. The electrocardiographic and clinical diagnosis was unequivocally a heart attack. Because his family as well as his physician want to know the precise cause of death, an autopsy is requested. After the pathologist finishes, he reports that, other than lung congestion which probably occurred just before death, there was little else. The heart appeared to be normal.



The coronary arteries were remarkably free of the fatty deposits and calcified plaques of atherosclerosis. No coronary thrombosis was found. The pathologist, almost in embarrassment, shrugs his shoulders and says that it was a "physiological" death and no anatomic cause could be found. His report depresses and dismays the family. Their loved one died without good reason. Why?

Variations of the above story have occurred over and over again during the past 100 years. No completely satisfactory explanation has been found, in spite of intensive investigations in many medical centers. Nevertheless, with the use of exercise testing and coronary arteriography (a moving picture x-ray study during which an opaque dye is injected into the coronary arteries), some suspected mechanisms now have been confirmed.

Prinzmetal angina

In 1959 Dr. Myron Prinzmetal, chief cardiologist at the City of Hope Hospital, Los Angeles, Calif., published an article in the *American Journal of Medicine* which made him forever famous. He described a variant form of angina (heart pain), thereafter called Prinzmetal angina, which occurs almost exclusively at rest. The patient can perform vigorous exercise without any chest pain, shortness of breath or electrocardiographic abnormality. The electrocardiogram, nevertheless, is markedly abnormal during the attack. Normally angina is always preceded by an increase in heart rate and blood pressure but in Prinzmetal angina it is not. The arteriogram shows a local area of narrowing of the major coronary artery which would have been expected from the appearance of the electrocardiogram. What puzzled Prinzmetal and others

was the fact that the narrowing was insufficient to account for the symptoms and was not enough to produce angina when the patient exercised. What really shocked cardiologists was the often completely normal arteriogram between attacks. Was spasm the answer?

In 1972, a group of cardiologists at the Colorado Medical Center in Denver "lucked" onto a case where the attacks of Prinzmetal angina were occurring often enough that they could catch one while an arteriogram was being filmed. The answer was immediately clear to everyone. Spasm in the right coronary artery was severe during the attack. The whole process was repeated on five separate occasions and the results were always the same. One time the spasm occluded the artery almost completely. Although spasm can sometimes be induced by the catheter used to inject the dye, it could not have been the cause in this case because the artery could be selectively injected when the patient was free of pain and the electrocardiogram normal without induction of spasm.

Arteriograms studied

Drs. Hafeez Khan and Julian Haywood of the University of Southern California Medical Center recently reported on a series of 78 consecutive coronary arteriograms performed six weeks to one year later on patients who had documented myocardial infarctions (heart attacks). In nine (12 percent) patients the coronary arteries were completely normal.

When the total clinical picture of these nine cases was reviewed, only two had more than one risk factor such as cigarette smoking, elevated cholesterol or triglycerides, high blood pressure, positive family history, amphetamine drug abuse, obesity or diabetes. None of the nine had high blood pressure or high cholesterol and triglyceride levels. They, therefore, were not typical of most heart attack victims.

Mechanisms proposed

The mechanisms now being proposed for severe or fatal heart attacks in persons with little or no demonstrable coronary atherosclerosis include prolonged artery spasm causing a disastrous arrhythmia, local heart muscle disease caused by drugs, hormonal disturbances related to tension or clots which rapidly disappear after the heart attack. There is also the possibility of "small vessel disease" which interferes with the circulation but cannot be demonstrated with arteriograms.

The important thing to remember is that some people with severe coronary atherosclerosis live to old age and a few people with no ap-

Anderson transfers to research laboratories in Tarrytown, N.Y.

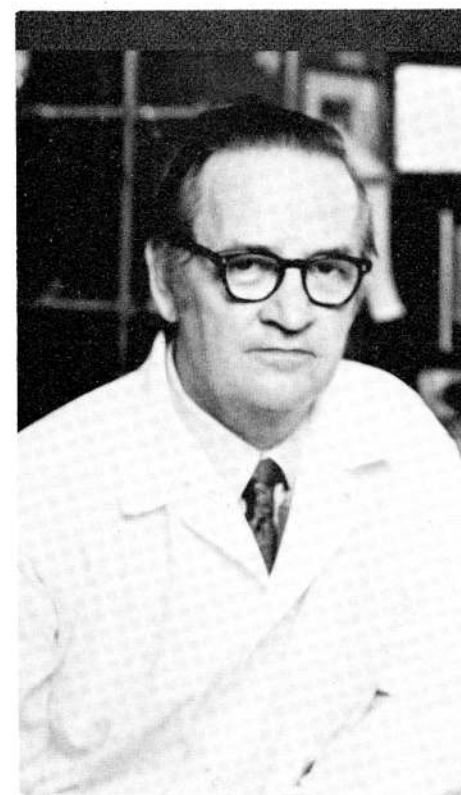
Norman Anderson, director of the Molecular Anatomy Program at ORNL, has transferred to Union Carbide's Research Laboratories at Tarrytown, N.Y.

Anderson will help direct an effort to expand and accelerate the Corporation's overall technical programs in support of its rapidly growing clinical diagnostics business.

Union Carbide entered the clinical diagnostics marketplace about three years ago with the introduction of the Centrifichem analyzer - an automatic system capable of swiftly performing a series of important diagnostic tests on blood samples in hospital laboratories. The company also markets reagents for use with its systems, as well as radiochemicals and radiodiagnostic materials used in nuclear medicine.

The research and development programs, which Anderson will be a part of, are directed at developing automatic systems for other clinical diagnostics requirements not now being served by automation.

In addition to his new appointment with Carbide, Anderson will join the faculty of the New York Medical College as adjunct professor of pathology. He will conduct research programs in the molecular basis of human disease at the



Norman G. Anderson

college's Westchester Campus, at the site of the developing Westchester Medical Center in Valhalla.

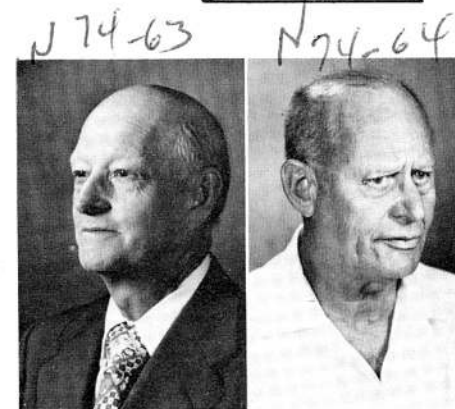


Division Retirees



Bertin

Chludzinski



Duncan

Ice



Potter

Among Y-12's retirees for August are five employees with company service totaling 104 years.

Phillip J. Bertin, Alpha 5 processing, has been with Union Carbide 20 years. He retires to his 111 West Maiden Lane, Oak Ridge, home.

Marion Chludzinski, mechanical inspection, came to Y-12 in 1952. He lives at 307 Vermont Avenue, Oak Ridge.

Maynard Duncan, electrical and electronics, came to Y-12 in 1953. He lives on Ridgeview Drive, Clinton.

Leonard C. Ice, H-2 and F-area shops, had 12 years service. He retires to his Route 3, Kingston, home.

parent disease succumb to a heart attack in the prime of life. Coronary heart disease is full of surprises, so don't be too quick to criticize the physician who performs a careful physical examination and pronounces his patient fit, only to have him die of a heart attack a week later.

Harold T. Potter, who also lives at Kingston, joined Y-12 in 1945. He retired from the electrical and electronics department.

RIDES — RIDES — RIDES — RIDES

ORNL

RIDERS from Solway Community to either portal, 8 or 8:15 a.m. shift. Bill Terry, plant phone 3-6775, or home phone 482-3147.

Y-12 Maintenance Division promotes four new foremen

Four new foremen have been named in the Y-12 Plant's Maintenance Division, according to J. W. "Bill" Ebert, division superintendent.

Thomas J. Bentley, formerly an electrician, has been with Union Carbide 16 years. A native of Knoxville, he attended schools there, and St. Ambrose College and The University of Tennessee. He was employed by the Tennessee Armature Company before joining Y-12.

Mrs. Bentley is the former Kathryn Davis, and they live at 3724 Frostwood Road, Knoxville. They have four children, Jean, Mark, Ann and Amy.

James M. Bowman, a native of Memphis, has been with Union Carbide five years. He attended school in Millington and holds a B.S. degree from Southern Mississippi University. Before becoming an electrician in Y-12, he worked with the Burtek Company, General Precision, Inc. and Infortronics Corporation.

He and his wife, the former Jeanne Kaufhold, live at 107 Pine Road, Norris. They have three children, James, Alex and Laura.

Dorris W. Bland, born in Nashville, has been at Y-12 more than eight years. He attended public schools in Nashville, the Air Force Electronic School and the Mid-South Electronics School, Nashville.

Mrs. Bland is the former Nancy Jo Wylie. They live at 435 Delaware Avenue, Oak Ridge, with their three children, Leslie, Jordana and William.

Edward E. Cook, another native of Knoxville, has been with Union Carbide 21 years. He graduated from Knoxville High School and attended Knoxville Business College.

Cook and his wife, the former Dottie Hedrick, live at 225 Grandeur Drive, Knoxville. They have a married daughter, Sandra Gossett, and a son, Thomas E. Cook.



Bentley

Bland



Bowman

Cook

Calendar of EVENTS

TECHNICAL September 20

Science and Technology Colloquium: "Interstellar Deuterium and its Cosmological Consequences," Jay M. Pasachoff, Williams College Observatory. Central Auditorium, Building 4500N, 11 a.m. (A bus for Y-12 area employees will leave the east end of building 9201-2 at 10:30 a.m. and return immediately after the talk.)

September 22-27

Symposium on Packaging and Transportation of Radioactive Materials: Fontainebleau Hotel, Miami Beach, Fla.

October 2-4

Thermonuclear Division Information Meeting: Oak Ridge National Laboratory.

COMMUNITY September 20-21

Playhouse presents: "Feiffer's People." Oak Ridge Playhouse, 8:20 p.m. Admission: \$1.

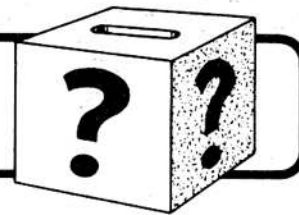
September 20-30

Oak Ridge Art Center presents: "Fantasy in Fabric." Art Center, 10 a.m.-2 p.m. weekdays; 2-5 p.m. weekends.

FORMER ORGDP MAN

Ernest H. Patton, retired electrician from the Oak Ridge Gaseous Diffusion Plant, died September 4, at the Oak Ridge Hospital. A native of Wagner, S.C., Mr. Patton was with ORGDP 15 years before he retired in 1959. He is survived by his wife and one sister. Funeral services were held at St. Mary's Church, Oak Ridge, with the Rev. Paul Villery officiating. Burial was in the Oak Ridge Memorial Park.

QUESTION BOX



(Continued from page 1)

more responsibility you should be compensated for the added responsibility instead of taking a pay cut. Maybe this is why not too many people in the plant want to come into the guard department.

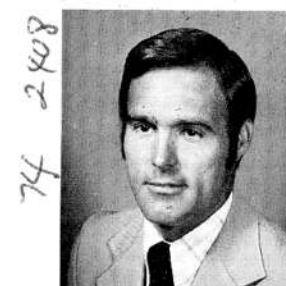
ANSWER: A janitor transferring to a guard job does not take a cut in pay since the starting rate for the guard job exceeds the top janitor rate at each of the Nuclear Division installations. There is no job bidding between the janitor and guard job since they are under different contracts. However, after contractual obligations are fulfilled, the Company may fill a vacancy by transfer prior to hiring from the outside. In such an instance, if any employee were moved to a lower rated job, a cut in pay might result.

QUESTION: Last year, Mr. Jasny gave a speech about the consolidation of the three plant engineering departments, and how it would provide greater flexibility in job assignments. He clearly inferred that employees would not only be transferred as they were needed elsewhere, but that they would have much greater job opportunity. So now, with the new "job bidding" policy, how come clerical employees are only allowed to bid on jobs openings in their own plant? Are we stuck in one plant for the rest of our Carbide days?

ANSWER: In developing the Job Opportunity System, every effort was made to keep the system as simple and informal as possible. It was felt that implementing such a system within a plant during the six-month trial period would be difficult enough

without adding the extra complications that would come if it should be decided to expand to Division-wide listing for every job opening. Transfers between installations are still permitted on an individual basis when warranted, but such transfers are not a part of the Job Opportunity System. The system was not instituted to limit opportunities but to expand them.

Bert Norris is new foreman at ORGDP



Norris

Bert N. Norris has been named a foreman in Oak Ridge Gaseous Diffusion Plant's Maintenance Division.

The Crossville native came to ORGDP two years ago, after working with the City of Oak Ridge as a lineman, and the Mid-Tennessee Electric Company in Crossville.

Mrs. Norris is the former Hilda Laney, and the couple lives at 102 Albright Road, Oak Ridge. They have three children, Terri, Tammy and Anita.

We're taxed right and left. Report our taxes right and we have nothing left... Arnold Glasow

WANTED



ORGDP

CAR POOL MEMBERS from East Wolf Valley Road area of Clinton to K-25 Ad Building Parking Lot, 7:45 a.m.-4:15 p.m. Sharon Robbins, plant phone 3-3331, or home phone Clinton 457-4519

Y-12 PLANT

JOIN CAR POOL from UT campus, Laurel Avenue area, Knoxville, to East or North Portal, 8 a.m. shift. Doug Turner, plant phone 3-7037 or home phone Knoxville 525-2400.

ORNL

RIDE or JOIN CAR POOL from Karns area to West Portal, 8 a.m. shift. Marie Wilson, plant phone 3-6844, home phone 947-6452.

Next Issue

The next issue will be dated October 3. The deadline is September 25.



UNION CARBIDE CORPORATION

NUCLEAR DIVISION
P. O. BOX Y, OAK RIDGE, TENNESSEE 37830

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